IN THE CLAIMS:

Please amend claim 2. Please add claims 4-15.

1. (Original) A composition comprising:

a bundle of individual carbon fibers, each of the carbon fibers forming a chain, each chain having a surface area greater than 13,000 m^2/g and a hydrogen adsorption capacity of approximately at least about 20 percent by weight.

2. (Currently Amended) A process of producing a hydrogen storage composition comprising the steps of:

providing a catalyst for the formation of carbon fibers;

limiting the nucleation sites present on the surface of the catalyst;

exposing the catalyst to a gaseous hydrocarbon;

<u>decomposing said hydrogen within the gaseous hydrocarbon and</u> dissolving the carbon from the hydrocarbon into the catalyst;

allowing the carbon to diffuse through the [alloy] <u>catalyst</u> and exiting upon a surface of the catalyst;

<u>forming a plurality of carbon chains on the surface of the catalyst</u>;

aggregating the carbon chains into a bundle; <u>and</u>

removing the bundles from the catalyst.

3. (Original) A process of producing a linear atomic chain of carbon comprising the steps of:

supplying a gas mixture comprising a hydrocarbon;

exposing said gas to a catalyst, the catalyst disassociating the hydrocarbon to carbon atoms and hydrogen molecules;

passing the disassociated carbon atoms from a first surface of the catalyst to a second surface of the catalyst along a temperature and pressure gradient;

forming a plurality of single chain carbon filaments along the second surface of the catalyst;

aggregating the single chain carbon filaments into a nanochain bundle, the bundle serving as a gas storage medium.

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4. (New) The process according to claim 3 wherein prior to exposing said catalyst to said gas mixture, said catalyst is exposed to a catalyst deactivator, thereby limiting the number of sites from which carbon atoms will pass through said catalyst.
5. (New) The process according to claim 4, wherein the catalyst deactivator is sulfur.
6. (New) The process according to claim 2, wherein the catalyst is a single crystal catalyst membrane of Ni or Ni-Cu alloys.
7. (New) The process according to claim 3, wherein the catalyst is a single crystal catalyst membrane of Ni or Ni-Cu alloys.
8. (New) The process according to claim 4, wherein the catalyst is a single crystal catalyst membrane of Ni or Ni-Cu alloys.
9. (New) The process according to claim 5, wherein the catalyst is a single crystal catalyst membrane of Ni or Ni-Cu alloys.
10. (New) The process according to anyone of claim 2, wherein said gaseous hydrocarbon is expose to said catalyst at a temperature range of 500-800°C.
11. (New) The process according to anyone of claim 3, wherein said gaseous hydrocarbon is expose to said catalyst at a temperature range of 500-800°C.
12. (New) The process according to anyone of claim 4, wherein said gaseous hydrocarbon is expose to said catalyst at a temperature range of 500-800°C.
13. (New) The process according to anyone of claim 5, wherein said gaseous hydrocarbon is expose to said catalyst at a temperature range of 500-800°C.
14. (New) The process according to anyone of claim 6, wherein said gaseous hydrocarbon is expose to said catalyst at a temperature range of 500-800°C.
15. (New) A process of producing a hydrogen storage composition comprising the steps of:

    providing a catalyst for the formation of carbon fibers;
    limiting the nucleation sites present on the surface of said catalyst;
    exposing said catalyst to a gaseous hydrocarbon;

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decomposing said hydrogen within said gaseous hydrocarbon and dissolving said carbon from said hydrocarbon into said catalyst;

allowing said carbon to diffuse through said catalyst and existing upon a surface of said catalyst;

forming a plurality of carbon chains on the surface of said catalyst;

aggregating said carbon chains into a bundle; and

removing said bundles from said catalyst, each bundle comprising individual carbon fibers, each of said carbon fibers forming a chain, each chain having a surface area greater than 13,000 m^2/g and a hydrogen adsorption capacity of approximately at least about 20 percent by weight.

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